CHAPTER 30

LIGHTNING PROTECTION

30-1. Minimum maintenance activities for lightning protection systems

Lightning protection systems include air terminals, masts, overhead ground wires, grounding and bonding conductors, connectors, ground rods, etc. as described in National Fire Protection Association (NFPA) 780, Standard for Installation of Lightning Protection Systems. The table located at the end of this chapter indicates items that must be performed to maintain systems and equipment at a minimum level of operational readiness. The listed minimum action items should be supplemented by manufacturer-recommended maintenance activities and procedures for specific pieces of equipment. Maintenance actions included in this chapter are summarized in table 30-1.

30-2. General maintenance procedures for lightning protection systems

Listed below are the procedures for inspecting and testing equipment connections for their ability to prevent lightning damage. Inspection frequencies may be increased as required based on observations and experience.

a. Review maintenance records. Personnel should review past maintenance records to find repair patterns. These records may point to certain components that should be closely inspected during performance of preventive maintenance.

b. Review operator records. Review operator records for items pertaining to the lightning protection system.

c. Equipment inspection. Perform a general inspection of the lightning protection system as described below.

(1) Inspect electrical connections for degradation. Repair as required.

(2) Inspect structure surfaces near lightning protection system components for discoloration and degradation. Repair as required.

(3) Inspect for loose connections and components. Tighten as required.

(4) Inspect connections and components for excessive corrosion. Take corrective measures as required.

d. Tighten connections. All accessible lightning protection connections should be torqued to the proper design value.

e. Perform connection measurements. Measure earth electrode bonding and conductor impedances as described below.

(1) Perform earth electrode and bond measurements using methods described in chapter 29.

(2) Measure lightning protection conductor impedance using the two-point method of Institute of Electrical and Electronic Engineers (IEEE) 81, Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.

f. Recertify system (if required). A certified or labeled lightning protection system may need to be inspected occasionally by a third party and recertified. This item is included here to act as a reminder to pursue recertification if required.

Table 30-1. Lightning Protection

Lightning Protection	
Action	***Frequency***
Review maintenance records.	yr
Review operator records.	yr
Inspect lightning protection system for the following:	
Inspect electrical connections for degradation. Repair as required.	yr
Inspect structure surfaces near lightning protection system components for discoloration and degradation. Repair as required.	yr
Inspect for loose connections and components. Tighten as required.	yr
Inspect connections and components for excessive corrosion. Take corrective measures as required.	yr
Tighten connections.	yr
Perform connection measurements.	
Perform earth electrode and bond measurements using methods described in chapter 33.	yr
Measure lightning protection conductor impedance using the two-point method of IEEE 81.	yr
Recertify system (if required).	as req'd